



U.S. Department of Agriculture
Animal and Plant Health Inspection Service
Wildlife Services

Historic document – Content may not reflect
current scientific research, policies or practices.

BHL



Blank Page Digitally Inserted

dep

**PRELIMINARY KEYS TO WATERFOWL
AGE AND SEX IDENTIFICATION
BY MEANS OF WING PLUMAGE**



SPECIAL SCIENTIFIC REPORT--WILDLIFE No. 82

**UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE**

The United States Department of the Interior, created in 1849, is concerned with management, conservation, and development of the Nation's water, wildlife, fish, mineral, forest, and park and recreational resources. It has major responsibilities also for Indian and Territorial affairs.

As America's principal conservation agency, the Department works to assure that nonrenewable resources are developed and used wisely, that park and recreational resources are conserved for the future, and that renewable resources make their full contribution to the progress, prosperity, and security of the United States, now and in the future.



UNITED STATES DEPARTMENT OF THE INTERIOR

Stewart L. Udall, *Secretary*

Frank P. Briggs, *Assistant Secretary for Fish and Wildlife*

FISH AND WILDLIFE SERVICE

Clarence F. Pautzke, *Commissioner*

BUREAU OF SPORT FISHERIES AND WILDLIFE

Daniel H. Janzen, *Director*

PRELIMINARY KEYS TO WATERFOWL AGE AND SEX IDENTIFICATION BY MEANS OF WING PLUMAGE

By

Samuel M. Carney
Migratory Bird Populations Station
Division of Wildlife Research



Special Scientific Report--Wildlife No. 82
Washington, D. C. • March 1964

LIBRARY, WILDLIFE RESEARCH CENTER
U.S. FISH & WILDLIFE SERVICE
BLDG. 16, FEDERAL CENTER
DENVER, COLORADO 80225

BHL



Blank Page Digitally Inserted

CONTENTS

	Page
Abstract.....	vi
Introduction.....	1
Mallard (<u>Anas platyrhynchos</u>).....	2
Black Duck (<u>Anas rubripes</u>).....	5
Gadwall (<u>Anas strepera</u>).....	7
American Widgeon (<u>Mareca americana</u>).....	10
Green-winged Teal (<u>Anas carolinensis</u>).....	12
Blue-winged Teal (<u>Anas discors</u>).....	14
Shoveler (<u>Spatula clypeata</u>).....	17
Pintail (<u>Anas acuta</u>).....	20
Wood Duck (<u>Aix sponsa</u>).....	23
Separation of Redheads and Canvasbacks.....	26
Redhead (<u>Aythya americana</u>).....	27
Canvasback (<u>Aythya valisineria</u>).....	29
Greater Scaup (<u>Aythya marila</u>).....	31
Lesser Scaup (<u>Aythya affinis</u>).....	34
Ring-necked Duck (<u>Aythya collaris</u>).....	36
Common Goldeneye (<u>Bucephala clangula</u>).....	38
Bufflehead (<u>Bucephala albeola</u>).....	39
Hooded Merganser (<u>Lophodytes cucullatus</u>).....	40
White-winged Scoter (<u>Melanitta deglandi</u>).....	42
Separation of Oldsquaws, Surf, and American Scoters.....	43
American Scoters (<u>Oidemia nigra</u>).....	44
Oldsquaw (<u>Clangula hyemalis</u>).....	44
Surf Scoter (<u>Melanitta perspicillata</u>).....	45
Eider (<u>Somateria mollissima</u>).....	45
Separation of American and Red-breasted Mergansers.....	46
American Merganser (<u>Mergus merganser</u>).....	46
Red-breasted Merganser (<u>Mergus serrator</u>).....	46
Ruddy Duck (<u>Oxyura jamaicensis</u>).....	47
Brant (<u>Branta bernicla</u> & <u>B. nigricans</u>).....	47

PLATES (Drawings by Alfred J. Godin)

1. Typical Dabbling Duck wing.....	v
2. Procedure for measuring wings.....	vi

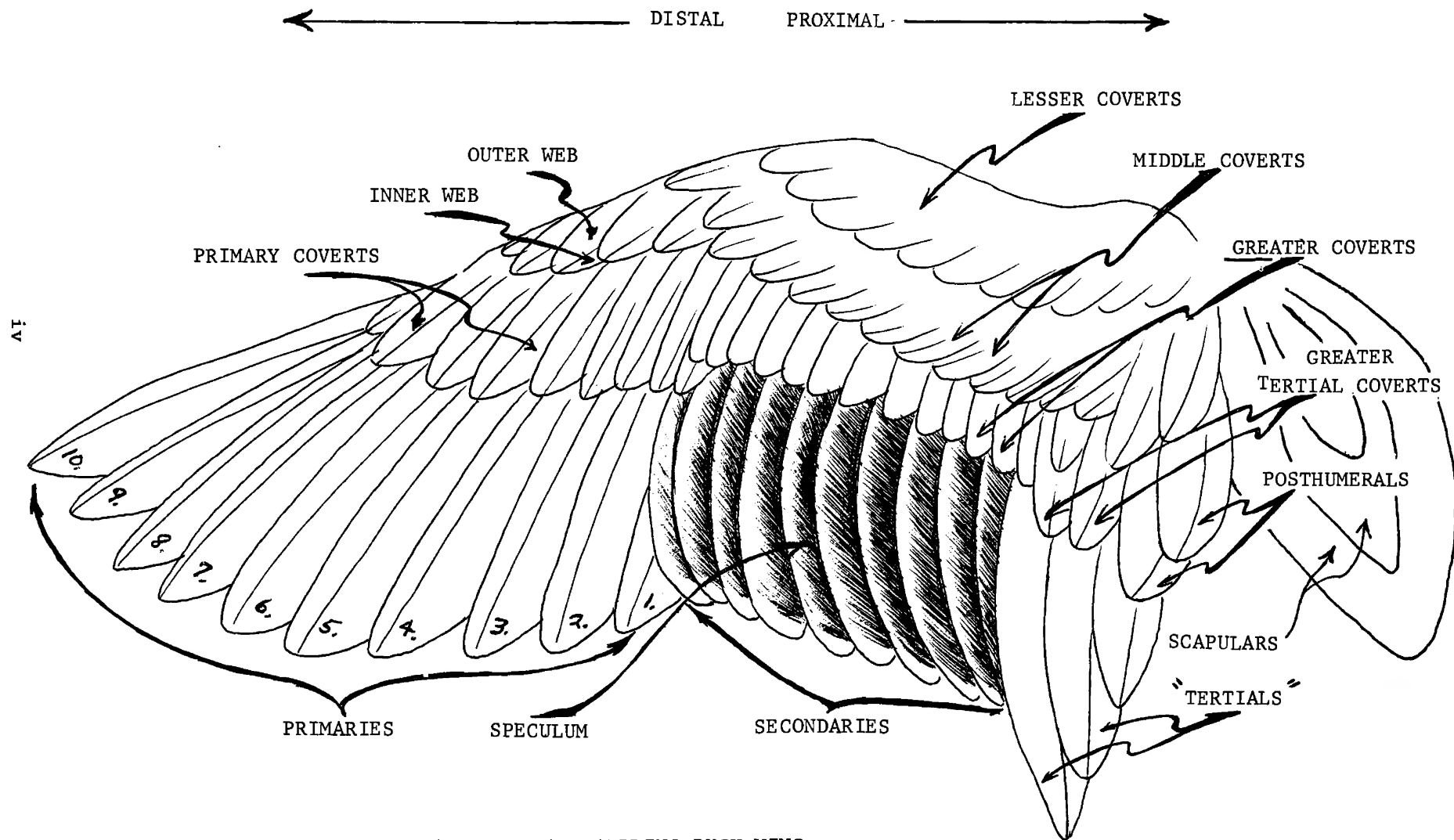


Plate 1. TYPICAL DABBING DUCK WING

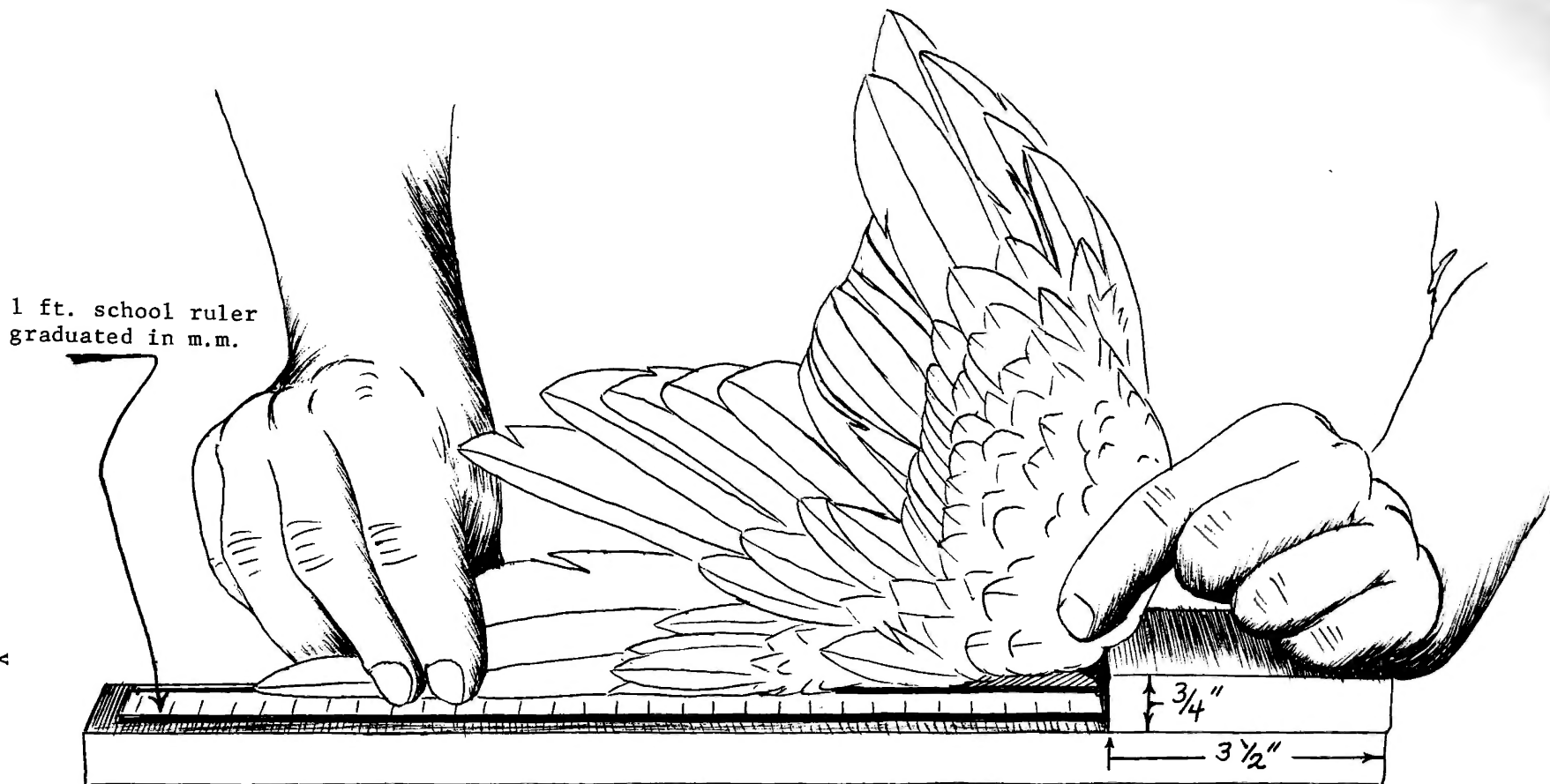


Plate 2. PROCEDURE FOR MEASURING WINGS:

Place the heel of one hand over the end of measuring board and grasp wing in the area of the radius and ulna. Pull wing until the wooden block seats itself tightly into the notch at the bend of the wing. Using the other hand flatten the leading edge of the wing against the ruler and note the length of the wing to the longest primary.

NOTE: If primary quills are not completely grown the measurement is not valid.

ABSTRACT

This paper describes characters in the wing plumage that are useful for determining age and sex of most common species of ducks. Each species is discussed briefly, and a key outlining a logical order in which to examine age and sex characters is presented. This report was prepared in response to requests for information and should be considered a preliminary report on work in progress. A more complete report elaborating upon the material presented here and incorporating new findings will be published later.

INTRODUCTION

On the wings of the most common species of ducks, there usually are slight differences in feather color, pattern, shape, wear, or feather replacement, that are sufficient to separate immature (young of the year) from older birds. Age determination is largely a matter of the step-by-step search for one or more of these characters which usually consist of traces of the juvenile plumage. Wings on which no traces of immaturity can be found, or in some instances which have positive adult characters, are from adult birds.

This report summarizes the methods used in the Duck Wing Collection Survey to determine the age and sex of the more common species in the kill (Glover, Fred A. and J. Donald Smith, 1963, Waterfowl Status Report, U.S. Fish and Wildlife Service, Special Scientific Report--Wildlife 75). Keys are provided to assist in an orderly search for pertinent characteristics. Plates 1 and 2 illustrate the wing parts discussed in the keys and the method of measuring a duck wing. Workers will find the keys useful as guides to identification of the various sex and age groups of the more common ducks, however, before a high level of proficiency can be attained, they will need to examine the wings from a number of birds of each group in order to become familiar with the variations among individual wings within the groups.

The age and sex criteria being used for the mallard, black duck, American widgeon, green-winged teal, pintail, redhead, canvasback, greater and lesser scaup, and the common goldeneye are probably reliable throughout the period from October 1st to at least mid-January. Age criteria for the blue-winged teal, cinnamon teal, shoveler, gadwall, wood duck, ring-necked duck, and hooded merganser are known to be reliable for the early portion of the season, but accuracy has not been thoroughly established for these criteria later in the season. We have had very limited opportunity to check the reliability of age criteria for the mottled duck, bufflehead, ruddy duck, scoters, eiders, oldsquaw, and large mergansers. Further study may result in verifying characters useful for distinguishing the age and sex of most of these species. At present, methods for these species are largely hypothetical.

Familiarity with the age and sex criteria found on duck wings is of considerable help during banding operations. Ducks caught in traps, however, often become water-soaked, dirty, and otherwise quite bedraggled, thus making identification by minute differences between feathers virtually impossible. For this reason, identification of age by wings cannot be substituted for cloacal examination in many cases.

With the exception of the mallard (Carney, Samuel M. and Aelred D. Geis, Mallard Age and Sex Determination from Wings. J. Wildl. Mgmt., 24(4):372-381), we have been unable to measure the degree of accuracy of the various age and sex determinations to our complete satisfaction, therefore, we have not previously released these keys to other workers. The demand for all of the keys has been so persistent that, although we are in the process of preparing an illustrated version, it seems most practicable to distribute this report on existing methods. In doing so, we solicit the comments and criticisms of our readers.

MALLARD

Sex Determination

Wings with vermiculated scapulars are from males. Wings with non-vermiculated scapulars may be from either males or females. The white bar anterior to the speculum extends at least partially over the tertials on wings from females, but terminates at the proximal edge of the speculum on male wings.

Age Determination of Males

The juvenile tertials are often frayed and faded, usually narrow, and lack the pearly color of adult tertials. By late November these are replaced by first winter tertials, identical in appearance to adult feathers. Juvenile tertial coverts are often frayed, faded, and narrow. These may be replaced by first winter coverts which are broader, unfrayed and similar to adult coverts. Many immature males show light edging on the inner webs of the 4 most distal primary coverts. Adults do not show this character. The middle coverts of immatures are narrower and more trapezoidal than those of adults. Occasionally, these feathers are rough and/or lightly edged on immature birds. This is not true of adults.

Age Determination of Females

Tertials that are frayed or faded are remnants of juvenile plumage and are found only on immature birds. The tertial coverts of immatures are often frayed, faded and narrow, and the 2 most proximal often lack the white of the anterior speculum bar. Conspicuous light edging on the inner webs of the 4 most distal primary coverts is found only on immatures. Adults may show "minute" or no edging on these coverts. Middle coverts of immatures are narrow and trapezoidal, while adults are broadly rounded.

KEY TO MALLARD WINGS

Sex Determination

1. Scapulars:

- (a) Some vermiculated ----- Male
- (b) All barred (or absent) ----- 2

2. Proximal Under-wing Coverts:

- (a) Conspicuously barred ----- 3
- (b) Vermiculated ----- Male

3. White Bar Anterior to Speculum:

- (a) Extends proximally at least partially over tertials-Female
- (b) Does not extend over tertials ----- Male

Age Determination of Males

1. Greater Tertial Coverts:

- (a) Any of the following: much frayed, faded,
noticeably narrow and dull colored ----- Immature
- (b) Not frayed or faded, generally broad, often
rufous colored ----- 2

2. Tertials:

- (a) Any of the following: "pearly" color lacking,
much frayed at tips, much faded, erupting new
tertial after December 1st ----- Immature
- (b) Generally "pearly" colored, not frayed or faded,
no new tertials erupting ----- 3

3. Primary Coverts: (Tip of inner web on four most distal coverts)

- (a) "Conspicuously" to "minutely" light edged ----- Immature
- (b) No edging present ----- 4

MALLARD (Continued)

4. Middle Coverts:

- (a) Any of the following: edged (usually finely) with light brown, appear small, narrow to a rounded tip, somewhat trapezoidal, edges much frayed ----- Immature
- (b) All of the following: not edged, may be "washed" with dark rufous, appear large, tip a smoothly rounded arc, edges smooth ----- Adult

Age Determination of Females

1. Greater Tertial Coverts: (One or more of five most proximal coverts)

- (a) Any of the following: much frayed at tips, faded, noticeably narrow, no white edging on two most posterior feathers ----- Immature
- (b) All of the following: not frayed at tips, not faded, broad, white edging on two most posterior feathers -- 2

2. Tertials:

- (a) Any of the following: much frayed at tips, much faded ----- Immature
- (b) All of the following: not frayed at tips, not faded ----- 3

3. Primary Coverts:

- (a) Four most distal "conspicuously" light edged on their inner webs ----- Immature
- (b) Four most distal "minutely" edged, or not edged on their inner webs ----- 4

4. Middle Coverts:

- (a) Any of the following: appear small, narrow to a rounded tip, somewhat trapezoidal, edges much frayed ----- Immature
- (b) All of the following: appear large, tips are smoothly rounded arcs, edges smooth ----- Adult

BLACK DUCK

Age Determination

Tertials that are small and much faded and/or frayed at the tips are remnants of the juvenile plumage. Adult tertials and tertials of the first winter plumage are larger and are unfrayed or not faded. Terial coverts that are narrow and much frayed and/or faded are also presumed to be remnants of the juvenile plumage. Adult and first winter plumages have wide, unfrayed and unfaded terial coverts that are broadly rounded.

Middle coverts of the juvenile plumage are narrow, and somewhat trapezoidal. Middle coverts of adult and first winter plumages are wider and smoothly rounded. The juvenile tertials and terial coverts are present early in the season (October) and to a lesser extent until the end of the hunting season. Juvenile middle coverts appear to persist, at least in part, until the end of the season. The best place to look for juvenile middle coverts is just anterior to the terial coverts.

KEY TO BLACK DUCK WINGS

Age Determination

1. Tertials:

- (a) Very small and narrow, and/or with frayed tips ----- Immature
- (b) Not noticeably small or narrow, never with
frayed tips ----- 2

2. Greater Terial Coverts:

- (a) One or more of the most proximal much faded,
or frayed, and obviously remnants of
another plumage ----- Immature
- (b) All uniform, not frayed or faded ----- 3

3. Primary Coverts:

- (a) Four most distal conspicuously edged light
on their inner webs ----- Immature
- (b) Four most distal not edged light on inner webs ----- 4

BLACK DUCK (Continued)

4. Middle Coverts:

- (a) First row anterior to greater coverts appear small, narrow and trapezoidal, and/or some coverts in either of 2 rows anterior to this (particularly over tertials) appear small and narrow or of obviously different plumage ----- Immature
- (b) First row anterior to greater coverts appear medium to large, rounded tips and no coverts of obviously different plumages ----- Adult

Sex Determination of Adults

1. Wing length: (see Plate 2)

- (a) 282 mm. or longer ----- Adult Male
- (b) 281 mm. or less ----- 2

2. Wing length: (continued)

- (a) 278 mm. or less ----- Adult Female
- (b) 279-281 mm. ----- 3

3. Speculum:

- (a) Three most distal secondaries lack purple color (faint iridescence may show when tilted) ----- Adult Female
- (b) Not more than two of most distal secondaries lack purple color ----- 4

4. Tertials:

- (a) At least one of two longest tertials edged on tip ----- Adult Female
- (b) No tertials edged at tips ----- 5

BLACK DUCK (continued)

5. Tertials: (continued)

- (a) Taper to a point, outer web "pearly" colored ----- 6
- (b) Blunt tip or more abruptly pointed, outer
web not pearly ----- Adult Female

6. Greater Tertial Coverts:

- (a) Three most posterior coverts widely edged
with two shades of edging ----- Adult Female
- (b) Three most posterior coverts not widely edged
usually one shade of edging ----- Adult Male

GADWALL

Sex Determination of Adults

Adult male tertials are long, acutely pointed and silver-gray. Adult female tertials are shorter, more bluntly pointed, and silver-brown with cream colored tips. Adult male greater tertial coverts are part black and part gray, rarely with traces of white tipping. Adult female greater tertial coverts are similar but usually much tipped with white. Adult male middle coverts consist of some black and some chestnut coverts but none of these are edged. Adult female middle coverts generally contain some black and some chestnut coverts but these are much restricted to the posterior 3 or 4 rows. Coverts in the remaining rows are edged, without internal marks, or with wide arcs or bars. The lesser coverts of adult males are unedged but with arc and fleck patterns, or rarely plain. Lesser coverts of adult females are similar to the middle coverts and are edged and plain, or edged but contain wide internal bars or arcs. Adult male wings are usually 265 mm. or longer, and adult female wings are usually 263 mm. or shorter.

Sex Determination of Immatures

Juvenile tertials of both sexes are short, bluntly pointed, and usually much frayed and faded at their tips. Late in the season these tertials are replaced by feathers similar to those of adult birds of a given sex. Immature female wings usually lack chestnut middle coverts and often have flat or U-shaped patterns on these feathers. Immature males generally have some chestnut middle coverts and tend toward more complex patterns. Wings of immature males generally measure 260 mm. or longer, those of immature females 259 mm. or shorter. The greater tertial coverts of both sexes are part black and part gray and generally tipped with white.

GADWALL (continued)

Immature males can be confused with adult females. However, the greater tertial coverts of adult females are broader with more white tipping than those of immature males. The posthumerals of adult females are wider and much more heavily edged with cream than those of immature males. The lesser coverts of adult females never have the fine arc and fleck pattern.

KEY TO GADWALL WINGS

1. Tertials:

- (a) Silver gray, tips are long and acute, no brown at ends, unfrayed ----- 2
- (b) Brownish-gray to brownish, tips are bluntly pointed, often with light brownish tips, may be frayed ----- 3

2. Middle Coverts:

- (a) All heavily washed with chestnut and/or black, coverts do not show light edging ----- Adult Male
- (b) Many not heavily washed with chestnut or black, coverts show conspicuous light edges ----- Immature Male (some)

3. Tertials:

- (a) Brownish-gray, tipped with light brown, unfrayed--4
- (b) Brownish-gray to brown, light brown tipping may be present or absent, may be much frayed ----- Immature 6

4. Greater Tertial Coverts:

- (a) Dull brownish and much frayed and faded or part black with white wispy tips, often appear narrow ----- Immature 6
- (b) Dull gray or black, not much frayed, usually have white tips but not wispy tips, usually appear wide ----- 5

KEY TO GADWALL WINGS (continued)

5. posthumerals:

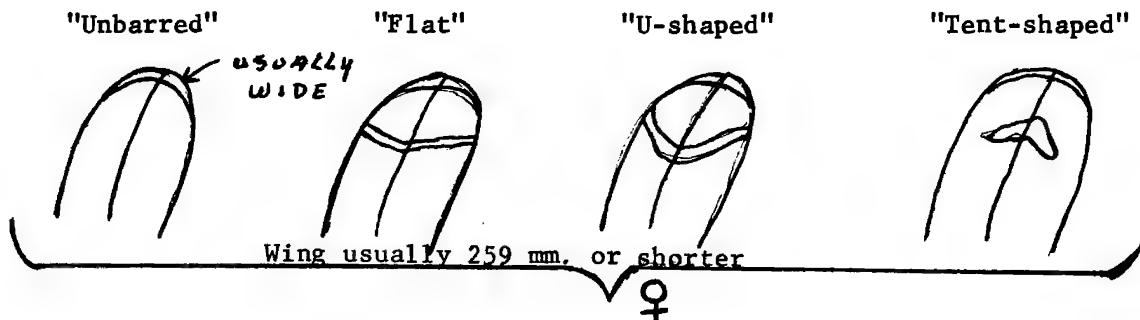
- (a) Dull gray brown, broadly rounded tips that are usually tipped with light brown, unfrayed ----- Adult Female
- (b) Dull gray brown, narrowly rounded tips that are usually plain but often much frayed ----- Immature 6

6. Middle Coverts:

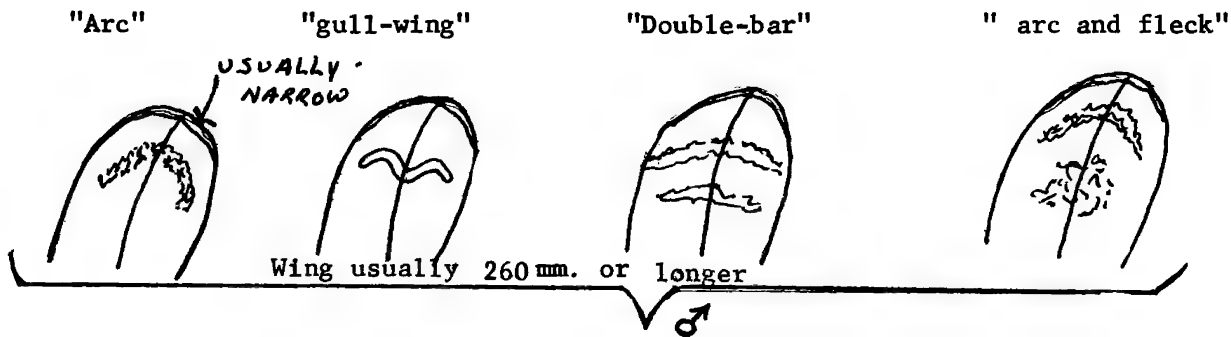
- (a) One or more rows heavily washed with chestnut ---- Immature Male
- (b) Chestnut wash absent or restricted to traces at edges of coverts ----- 7

7. Middle Coverts: (pattern)

- (a) Black coverts usually confined to area anterior to white in speculum, mostly unbarred, or with single flat, U-shaped or tent-shaped bars ----- Immature Female



- (b) Black coverts often extend over area anterior to all secondaries, barred with arcs, gull-wing, double-bar, arc and flecking or unbarred but heavily flecked ----- Immature Male



AMERICAN WIDGEON

Sex Determination of Adults

Wings with vermiculated scapulars are from males. Wings with non-vermiculated scapulars may be from either males or females. The tertials of adult males are long and acutely pointed. The outerweb is entirely shiny black with a narrow trim of white running the entire length of the feather's edge. The rachis is trimmed with white. The inner web is a dull, dark gray and the tips may have traces of vermiculation. Tertials of adult females are shorter and more bluntly pointed. The outerweb is brownish-gray and edged with white over its entire length. The rachis is not trimmed. The inner web is gray. The feather tip is never vermiculated. The greater tertial coverts of adult males are gray, pointed and usually have traces of vermiculation near their tips. On adult females these feathers are dark brown but are edged with a conspicuous white arc around each covert. The middle coverts of adult males are entirely white anterior to the secondaries but gray anterior to the tertials. The middle coverts of adult females have light colored centers surrounded by darker areas and each covert is circumscribed by a sharply defined white edging. Under-wing coverts of adult males are pale but heavily flecked. Those of adult females are brownish with white edging.

Sex Determination of Immatures

Immatures of either sex can be recognized by the small, light-edged, brownish tertials that are usually frayed and faded. Immature greater tertial coverts are also small, brownish and much frayed and faded.

The middle coverts of immature males vary from a "dirty white" to dark feathers with light centers surrounded by cream or gray edging that is poorly defined. On immature females these feathers are dark, lack light centers, and usually have light brown edging that is fairly well defined. The greater coverts over the secondaries on immature males generally have white outerwebs. On immature females these feathers are usually a dull brown on both sides of the rachis. Older immatures may show the same sex difference on the under-wing coverts as do adult birds but some immature males appear female-like.

KEY TO AMERICAN WIDGEON

1. Middle Coverts:

- (a) All entirely white except those over tertials ---- Adult Male
- (b) Some or all other than white ----- 2

2. Scapulars:

- (a) Some vermiculated ----- Immature Male
- (b) All barred, or absent ----- 3

3. Middle Coverts: (continued)

- (a) Most dirty white to gray, lighter at centers,
or some entirely white, unedged or very
indistinctly edged white or gray ----- Immature Male
- (b) Most grayish or brownish, more or less con-
spicuously edged with light gray or white ----- 4

4. Tertials or tertial coverts:

- (a) Frayed and/or faded ----- 5
- (b) Not frayed or faded ----- 6

5. Either of the following:

- (a) Bases of outer webs of greater coverts white, most
posterior row of middle coverts with light gray
centers but indistinctly edged near the "wrist" -- Immature Male
- (b) Bases of outer webs of greater coverts gray or
"dirty white", most posterior row of middle
coverts with dark or with brownish centers,
or distinctly edged near "wrist" ----- Immature Female

6. Either of the following:

- (a) Middle coverts edged with "dirty white", have
dark centers or brownish centers. Greater coverts
bases of outer webs "dirty white" or gray ----- Immature Female
- (b) Middle coverts edged with white, centers light with
brownish bars. Greater coverts bases of outer webs
"dirty white" or gray ----- Adult Female

GREEN-WINGED TEAL

If the scapulars are attached, the presence of one or more vermiculated feathers indicates that the wing is from a male. If none of the scapulars are vermiculated, the wing could be that of either a male or female.

The stripe on the most distal tertial is the most useful indicator of sex. On the wings of males, this stripe is black and sharply delineated from the basic feather color. On the wings of females, this stripe is blackish to brownish, but grades into the basic feather color. The wing length of females rarely exceeds 183 mm.

Juvenile tertials are small, narrow, and rather delicate. The tips of these feathers are often badly frayed. Adult female and first winter tertials are heavily edged with cream. Adult male and first winter tertials are long, unedged, or with narrow edging. Because adult and first winter tertials are similar for a given sex, the presence of "adult type" tertials is not by itself an indication of age. Many birds molt tertials during the hunting season. For some of these, it is possible to split incoming pin feathers with a thumb-nail to see whether the new feather is male or female in character. For other birds with molted tertials, determination of sex is not possible.

Tertial coverts that are long and narrow, showing fine, light edging, and a fringed-fraying are remnants of juvenile plumage and positively identify the birds as being immatures. The tertial stripe may be used to separate the sexes. Adult female and female first winter tertial coverts are broadly rounded and widely edged with cream or brown. Adult male and male first winter tertial coverts are a uniform gray, sometimes with a narrow buffy edging, and tapering to a blunt point. In each sex, the adult and first winter tertial coverts are similar, and thus "adult type" tertial coverts are not a sure indication of age.

Middle coverts of adult males are smooth and unedged. Middle coverts of immatures are rough and may show gray-appearing wear at their edges. Immatures may also possess light edging which is more pronounced on females but may also be present on males. Broad, rounded, heavily-edged middle coverts are present on adult females. Traces of juvenile plumage usually remain most obvious immediately anterior to the tertial coverts.

KEY TO GREEN-WINGED TEAL WINGS

Sex Determination

1. Tertials:

- (a) Longitudinal stripe brownish, grading into basic feather color; one or more tertials edged with buff --- Females
- (b) Longitudinal stripe black, clearly delineated from basic feather color; tertials buff-edged or solid gray-- 2

2. Any of the following:

- (a) Tertials solid gray unedged, black striped tertial more heavily edged with buff than others, with edging restricted to near tips, tertials often frayed at tips, vermiculated scapulars (may be) present. Wing usually 180 mm. or longer ----- Males
- (b) Tertials all about equally heavily edged with buff, unfrayed at tips, never have vermiculated scapulars. Wing 179 mm. or shorter ----- Females

Age Determination of Males

1. Any of the following:

- (a) Tertials gray but buff edged, often frayed; greater tertial coverts long narrow with fine light edging, wispy tips, usually dull faded color; primaries tipped with cream; primary coverts heavily light edged; middle coverts appear ragged, gray appearing wear around edges, somewhat narrow and trapezoidal --- Immature Males
- (b) Tertials unedged, gray, not frayed; greater tertial coverts unedged, same color as middle coverts, usually smooth; primaries not tipped with cream; primary coverts unedged or nearly so; middle coverts appear smooth, edges show little or no wear, broad and smoothly rounded ----- Adult Male

Age Determination of Females

1. Any of the following:

- (a) Tertials buffy edged, tips frayed; tertial coverts narrow with fine light edging, wispy tips, often a dull faded color; primary coverts heavily light edged; middle coverts appear ragged, gray, wear around edges, somewhat narrow and trapezoidal ----- Immature Female

GREEN-WINGED TEAL (continued)

- (b) Tertials buffy edged, tips unfrayed, usually edged over tips; tertial coverts broadly rounded, usually widely edged, occasionally narrow to unedged; primary coverts unedged to faintly edged; middle coverts broadly rounded, often well edged with buff but frequently unedged ----- Adult Female

BLUE-WINGED TEAL

Sex Determination

The sex of blue-winged teal can be readily determined from the appearance of the speculum and from the amount of white in the greater secondary coverts. The speculum of males is a bright iridescent green, while that of females is a dull non-iridescent green. The greater coverts of males appear entirely white at their extremities, while those of females are heavily spotted with dark or often appear more dark colored than light colored. Rarely a female shows a trace of iridescence in the speculum and rarely a male shows some spots in the greater coverts, but these oddities are still easy to place in their proper sex groups.

Age Determination of Males

The tertials of the juvenile plumage of males are conspicuously edged with tan and are a dull color, often faded brownish with much frayed tips. Adult tertials are greenish-black, are not much frayed, and are very long and acutely pointed. First winter tertials of immature birds are similar to those of adults but are usually still growing in December.

The tertial coverts of the juvenile male plumage are narrow and appear pointed, are often edged with light brown, and are often frayed. Tertial coverts of adult males and of first-year plumage of immatures are similar and are not conspicuously narrowed or pointed and do not show fading or fraying at the tips. These normally show edging on the outer web only that is concealed when feathers are lying in their normal unruffled position.

The greater coverts of immatures often show a pattern of dark spots at the tips of the white greater coverts different from that of adults (see following key).

BLUE-WINGED TEAL (continued)

Age Determination of Females

Tertials of the juvenile plumage of females are small, narrow, and frayed at the tips, while those of adults are wider, are usually heavily edged with brownish, and have blunt, unfrayed tips. NOTE: In December, adults may show some fraying.

Tertial coverts of the juvenile plumage are narrow, pointed, and somewhat fringed with the edging frayed off. In adult and first winter plumage, tertial coverts are edged with brown and somewhat more rounded than in the juvenile plumage.

Both tertials and tertial coverts appear to be adequate for separating the two age groups in October. In December, tertial coverts are probably accurate. The greater secondary coverts of adults usually contain less white than those of immatures. On adult wings, this white is often a "V" pattern. On immature wings, the white is rarely, if ever, in V's.

KEY TO BLUE-WINGED TEAL WINGS

Sex Determination

1. Speculum:

- (a) A bright iridescent green, easily visible ----- 2
- (b) Appears dark, may show faint traces of
green but no bright iridescence ----- Female

2. Greater Secondary Coverts:

- (a) When lying in normal aspect appear to be entirely
white but may have a few spots on inner-web which
are normally concealed ----- Male
- (b) Mostly well spotted with dark, or coverts pre-
dominantly dark with little or no trace of
white ----- Female

BLUE-WINGED TEAL (continued)

Age Determination of Males

1. Greater Tertial Coverts:

- (a) Often narrow and appear pointed with wispy tips, often edged with light brown to form an arc at tips ----- Immature
- (b) Usually not particularly narrow or pointed, without wispy tips, edging on outer web only, and normally concealed ----- 2

2. Greater Secondary Coverts:

- (a) Two or more small dark spots at tips of coverts ---- Immature
- (b) One or no dark spots at tips of coverts ----- 3

3. Tertials:

- (a) October: sepia, tips may be noticeably frayed, often wispy tipped, edge of outer web conspicuously edged tan, particularly to tips; December: as above or new short greenish black tertials coming in ----- Immature
- (b) October through December: greenish black, not noticeably frayed, never wispy tipped, outer web edging very narrow to absent, only minute tan at tips, full length in December ----- Adult

Age Determination of Females

1. Tertials:

- (a) Frayed or wispy tips ----- Immature
- (b) Tips not frayed or wispy ----- 2

2. Greater Secondary Coverts: (figure 1)

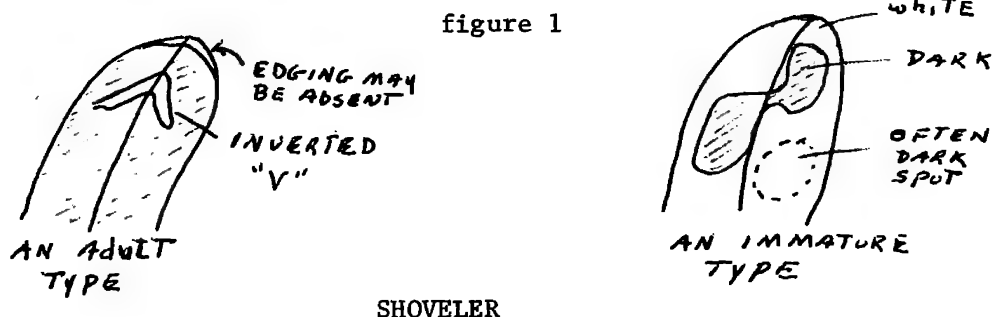
- (a) Little white trim, V pattern ----- Adult
- (b) Much white trim, pattern other than V ----- 3

3. Greater Tertial Coverts:

- (a) Sepia, may be narrow and appear pointed with wispy tips, edged tan but edging may be frayed off -----Immature

BLUE-WINGED TEAL (continued)

- (b) Greenish black, usually smoothly rounded, never with wispy tips, edged with tan which is never frayed off ----- 2



All birds having specula that are entirely gray or dull non-iridescent green or with only a few of the most proximal secondaries showing traces of green iridescence are females. A complete lack of iridescence is more common among immatures than among adults. The presence of a speculum, however, does not necessarily indicate a male.

Most females show cream edging on the lesser and middle coverts. This often covers all these feathers particularly on adult females. Immature males may show a few cream-edged feathers near the "wrist" but otherwise do not have this character.

The tertials of the juvenile male plumage are brownish and much frayed, while those of adults and first winter immatures are greenish black and much longer. The tertial coverts of the juvenile male plumage are brownish black and often show a fringed fraying. Adult tertial coverts are blackish, often washed with blue. Both juvenile tertials and juvenile tertial coverts are usually present during October.

Immature males generally have small dusky spots on their greater coverts, while adults do not.

The tertials of the juvenile plumage of females are similar to those on immature males. The tertials of adult females are wider and more heavily washed with white at the tips, and are unfrayed.

SHOVELER (continued)

The tertial coverts of the juvenile female plumage are similar to those of juvenile males. The tertial coverts of adult females and females in first winter plumage are brownish, heavily edged with white and unfrayed. Both juvenile tertials and tertial coverts are generally present in October.

The greater coverts of immatures generally show small dusky spots, while the greater coverts of adults do not.

KEY TO SHOVELER WINGS

Sex Determination

1. Speculum:

- (a) All secondaries gray or a dull non-iridescent green, or 1/3 of most proximal showing traces of iridescent green ----- Female
- (b) All or most secondaries a bright iridescent green ----- 2

2. Middle and Lesser Coverts:

- (a) Pale gray blue to gray, with varying amounts of cream edging ----- Female
- (b) Pale blue to pale gray blue. Cream edging absent except for traces at the leading edge of the wing or rarely on a few coverts near the wrist ----- Male

Age Determination of Males

1. Tertials:

- (a) Brownish, much frayed and faded, about the same length as secondaries, bluntly pointed ----- Immature
- (b) Basically greenish black, often heavily washed with white, noticeably longer than secondaries (except when growing), acutely pointed ----- 2

SHOVELER (continued)

2. Middle and Lesser Coverts:

- (a) Dull grayish or blackish blue ----- Immature
(b) Bright pale blue ----- 3

3. Greater Tertial Coverts:

- (a) Brownish black to brownish, often with fringed
fraying, may show brownish fading ----- Immature
(b) Shiny black, often showing a bluish shading ----- 4

4. Greater Coverts:

- (a) White feathers have small dusky spots at tips ---- Immature
(b) No small dusky spots ----- Adult

Age Determination of Females

1. Tertials:

- (a) Brown, whitish at tips, much frayed at tips
and often faded ----- Immature
(b) Blackish brown, tips heavily washed with
white, unfrayed at tips, unfaded ----- 2

2. Greater Tertial Coverts:

- (a) Brown, unedged or edged finely with white,
usually much frayed, rounded to a point ----- Immature
(b) Blackish brown, clearly edged with white,
unfrayed, unfaded, broadly rounded ----- 3

3. Greater Secondary Coverts:

- (a) White coverts show small dusky spots near
their tips ----- Immature
(b) White coverts do not show small spots near
their tips ----- Adult

PINTAIL

Sex Determination

The speculum is at least partly iridescent green on males, but a dull non-iridescent bronze or rarely non-iridescent green on females. Adult and first winter male tertials are long and gray with a wide marginal black stripe. The tertials of females are shorter and more brownish and lack the black stripe. Juvenile tertials of both sexes are similar and somewhat like those of females. Vermiculated scapulars are found only on males but non-vermiculated scapulars may be present on both males and females.

Tertials and scapulars are useful for identifying some males, but not for separating the sexes completely.

Age Determination of Males

The tertial coverts of the juvenile plumage are conspicuously edged with a light yellowish brown. Birds with such feathers are immature males. Tertial coverts of both adult and first winter plumages are unedged, and thus are found on both adult and immature birds. Tertials lacking the black edging are juvenile and represent immature males. It seems likely that birds with new tertials growing in after December 1st are immatures (as in the mallard).

The most useful character for separating the ages is the condition of the middle coverts. These are heavily edged on immatures and often appear narrow, rough, and frayed. Some of these feathers persist throughout the hunting season. On adult males, these feathers are unfrayed and generally unedged. About one wing in 20 shows faint light edging, but the general aspect of these is such that they can readily be identified as adults.

Age Determination of Females

The tertial coverts of the juvenile plumage are much frayed, often poorly edged and individual feathers often long and narrow. The tertial coverts of both adults and birds in their first winter plumage are not greatly frayed, are well rounded, and have conspicuous edging.

The middle coverts of the juvenile plumage are rather narrow and somewhat trapezoidal. The barring of these feathers is largely made up of triangular patches at the feather's edge. The middle coverts of adults are broad and rounded and the barring is made up of variable shaped patches recessed from the feather's edge.

KEY TO PINTAIL WINGS

1. Scapulars:

- (a) Vermiculated ----- Males
- (b) Not vermiculated ----- 2

2. Tertials:

- (a) Long, narrow; pearly gray with wide longitudinal black stripe surrounding shaft ----- Males
- (b) Grayish or brownish, without black longitudinal stripe ----- 3

3. Secondaries:

- (a) Speculum all or mostly iridescent green and/or most distal secondary with wide black marginal stripe on outer web but pale longitudinal stripe between this margin and the shaft ----- Males
- (b) Speculum dull non-iridescent bronze occasionally partly dull non-iridescent green, most distal secondary brownish without black marginal stripe (may show dark brown or pale stripe near shaft) ----- Females

Age Determination of Males

1. Tertial Coverts:

- (a) Conspicuously light edged ----- Immature
- (b) Not light edged ----- 2

2. Tertials:

- (a) One or more not black edged, one or more conspicuously frayed, new short black edged tertials growing after December 1st. ----- Immature
- (b) All tertials edged black ----- 3

3. Middle Coverts:

- (a) Conspicuously light edged but showing no light flecking ----- Immature
- (b) Usually a smooth solid unedged color, rarely slightly light edged, but showing light flecking - Adult

PINTAIL (continued)

Age Determination of Females

1. Tertials:

- (a) Faded and badly frayed, may have wispy tips,
often without light edging ----- Immature
- (b) May have considerable fraying but no wispy
tips, always some light edging ----- 2

2. Tertial Coverts:

- (a) Narrow, sometimes frayed or with wispy tips,
may be unedged ----- Immature
- (b) Broadly rounded, may be frayed, but no wispy
tips, always edged ----- 3

3. Greater Coverts:

- (a) Narrowly edged (anterior speculum bar) with
pale buff or white, often appear square,
bases often barred ----- Immature
- (b) Narrow to wide edging pale buff to buff,
margin of outer web rounded, bases show a few
small spots or are plain ----- 4

4. Middle Coverts:

- (a) First row appear pointed or small and trape-
zoidal, external type interrupted -barring
very common (figure 4a). ----- Immature
- (b) First row appears large and rounded, internal type
interrupted-barring (figure 4b). ----- Adult



WOOD DUCK

Sex Determination

The tertial coverts of females are pink while the tertial coverts of males are a dark purple. On very young birds of either sex, these feathers may be a yellow green. The trailing edge of the wing secondaries of females of all ages forms a white "tear drop" while this edging is white but flat and evenly distributed on males.

Age Determination of Males

The juvenile tertials of males are pale bronze usually with pointed frayed tips. The tertials of the adult and first winter plumage are a deep purple with somewhat squared ends. Juvenile tertials are usually replaced by mid-October.

Both the middle coverts and greater coverts of the juvenile male plumage are much duller purple than are those of the adult plumage. As the juvenile plumage is replaced by the first winter plumage, the presence of a few very dark purple feathers among the duller coverts indicates immaturity. The dark purple gradually spreads over the wing but usually does not extend onto the second row of middle coverts and is also much restricted to the area anterior to the tertials. Individual juvenile coverts possess dark terminal borders that tend to be slightly wider near the shaft while adult coverts have a uniform border. Adult coverts appear somewhat larger and smoother than do those of immatures. The most proximal greater covert of the juvenile plumage appears greener, duller, and usually smaller, than does the corresponding feather of the adult or first winter plumage.

Age Determination of Females

The juvenile tertials of females are similar in shape and color to the juvenile male tertials. Adult female tertials and immature first winter tertials are also a pale bronze but have rounded instead of pointed, frayed tips.

The tertial coverts of extremely young birds often are small and greenish yellow but they are soon replaced by the pink tertials of the first winter plumage which is similar to that of adult females.

Some metallic blue is usually present on the second row of the middle coverts and this coloring extends distally over two-thirds of the secondary coverts. Metallic-blue coloring usually does not extend onto the second row of middle coverts nor so far distally on the wings of immature birds. Adult coverts appear somewhat larger and smoother than those of immatures.

WOOD DUCK (continued)

Individual coverts of the juvenile plumage tend to show metallic blue only on the outer webs and the black terminal band is often slightly wider near the shaft of the feather. The most proximal greater covert is often greener and duller in the juvenile plumage than in the adult or first winter plumage.

KEY TO WOOD DUCK WINGS

Sex Determination

1. Greater Tertial Coverts:

- (a) All iridescent deep bluish purple,
greenish yellow or greenish ----- 2
- (b) One or more iridescent pink or purplish pink ----- Female

2. White trailing edge to Secondaries: (figure 1)

- (a) Much wider on outer web than on inner web--
usually in the form of a "tear-drop" ----- Female
- (b) Approximately the same width on both inner
and outer webs--generally flat uncurved
margin on outer web ----- Male

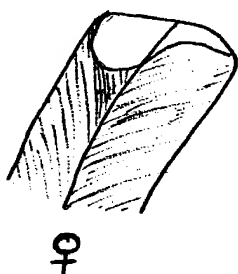
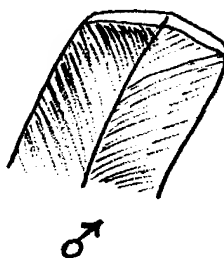


figure 1



Age Determination of Males

1. Tertials and Scapulars:

- (a) One or more pale bronze, narrow, somewhat
pointed, or with frayed tips ----- Immature
- (b) All deep bluish purple, wide, "squarish",
and with unfrayed tips ----- 2

WOOD DUCK (continued)

2. Greater and Middle Coverts:

- (a) One or more iridescent feathers noticeably deeper purple with broader black terminal bands than most distal iridescent coverts; metallic blue generally does not extend anteriorly to the second row of secondary coverts, blue color is much restricted distally to coverts near tertials, middle coverts rough and rather small, somewhat trapezoidal-- Immature
- (b) Iridescent feathers grade gradually from deeply colored to more lightly colored blues or purple, black terminal bands similar on all; metallic blue extends anteriorly onto the second row of secondary coverts and distally over two-thirds of the coverts anterior to the secondaries; middle coverts smooth, rounded, and rather large ---- 3

3. Most Proximal Greater Coverts:

- (a) Greener and duller than adjacent coverts, also smaller and narrower ----- Immature
- (b) Somewhat greener or lighter purple than adjacent coverts, but approximately the same size and shape ----- Adult

Age Determination of Females

1. Tertials:

- (a) One or more: pale bronze, narrow, pointed frond-like tips ----- Immature
- (b) All: pale bronze, wide with blunt round tips ----- 2

2. Greater Tertial Coverts:

- (a) Greenish yellow to greenish ----- Immature
- (b) Pink or purplish pink ----- 3

WOOD DUCK (continued)

3. Greater and Middle Coverts:

- (a) Greater coverts tend to show iridescence chiefly on outer webs, black margin tends to be wider at center giving coverts a slightly pointed look, blue coloring usually does not extend onto the third row of coverts anterior to the secondaries, and is much restricted distally to coverts near the tertials, middle coverts rough, rather small, and somewhat trapezoidal ----- Immature
- (b) Greater coverts tend to show iridescence on both inner and outer webs, black margin is generally uniform, blue coloring usually extends onto three or more rows of coverts anterior to the secondaries, and usually covers most of these feathers, middle coverts smooth, large and rounded ----- 4

4. Most Proximal Greater Covert:

- (a) Usually noticeably greener and duller than more distal feathers; tends to be small, narrow, and somewhat trapezoidal ----- Immature
- (b) Usually slightly lighter purple to greenish; but large, wide, and "squarish" ----- Adult

SEPARATION OF REDHEADS AND CANVASBACKS

Adult male canvasbacks have such a great amount of white on the upper surface of the wing that they cannot be easily confused with any other redhead or canvasback. The secondaries of all other canvasbacks are much darker than those of all redheads.

Thus, the contrast between the dark secondary coverts and the secondaries is much greater on the wings of redheads of all age and sex groups than on the wings of adult female or immature canvasbacks of either sex. This difference is sufficient to separate the two species accurately.

REDHEAD

Tertials of the adult plumage usually have rounded tips. Vermiculations near the tips are found only on males. Juvenile tertials are similar to those of adult females but are usually frayed to a point. The greater coverts of adults are broad and smoothly rounded especially over the tertials. Those of adult males are heavily flecked with white while those of females are unflecked or faintly flecked usually near their edges. Juvenile greater coverts are narrower, squared, often frayed to a point over the tertials and often with an indistinct pale edge over the secondaries. Those of immature males are usually faintly flecked while those of females are unflecked. The middle coverts of adults are broadly rounded, heavily flecked on males but plain or faintly flecked on females. Juvenile middle coverts are narrower, squared, and faintly flecked on males but unflecked on females.

During the hunting season, immature birds often replace both their juvenile tertials and greater tertial coverts with first winter feathers. For a given sex, these new feathers are indistinguishable from those of adult birds but markedly different from the other greater and the middle coverts which are retained.

With practice, redheads can be aged largely by tertial coverts. These feathers are in three categories: 1) adult type, similar to the surrounding coverts; 2) adult type, that are obvious replacements; and 3) juvenile type. Sex also can be determined from the first two, but it becomes necessary to refer to the middle coverts to determine the sex of the third type.

KEY TO REDHEAD WINGS

1. Tertials and Scapulars:

- (a) Some show vermiculation ----- Male 2
- (b) No tertials show vermiculation, some scapulars
may be heavily flecked (but not vermiculated)
at their bases ----- 3

REDHEAD (continued)

2. Greater Coverts:

- (a) Over the secondaries: usually not flecked or vermiculated but sometimes show barely discernible flecking, often indistinctly tipped with white

Over the tertials: appear narrow and ragged and somewhat brownish, or smooth and grayish, more heavily flecked than surrounding coverts (obviously new plumage coming in) ----- Immature Male

- (b) Over the secondaries: usually heavily flecked but sometimes lightly flecked, do not show white tipping

Over the tertials: appear broadly rounded, well flecked but similar to surrounding feathers in shape and color ----- Adult Male

3. Tertials:

- (a) Brownish gray, tips frayed to a point that usually causes fading to brown ----- Immature 5

- (b) Dark silver-gray brown, tips rounded and little frayed and unfaded ----- 4

4. Greater Coverts:

- (a) Over the secondaries: show indistinct white tipping

Over the tertials: narrow, ragged and faded, or new coverts that are smooth and rounded but grayer or more heavily flecked than surrounding coverts ----- 5

- (b) Over the secondaries: do not show any white border

Over the tertials: smooth and rounded and similar to surrounding coverts ----- Adult Female

REDHEAD (continued)

5. Upper Wing Coverts:

- (a) Greater coverts (over tertials): narrow and ragged, or new coverts that are grayer and more heavily flecked than surrounding feathers

Lesser and/or middle coverts: lightly flecked to barely discernibly flecked ----- Immature Male

- (b) Greater coverts (over tertials): narrow and ragged, or rounded but similar in color to surrounding coverts

Lesser and middle coverts: entirely unflecked ----- Immature Female

CANVASBACK

Tertials of the adult plumage usually have rounded tips. On male birds, heavy vermiculation causes them to appear white. On female birds, they are iron gray and flecked with white near their tips. Tertials of the juvenile plumage are usually frayed to a pointed tip, iron gray, and lightly vermiculated to heavily flecked on males, but plain or faintly flecked near the tips on females. The greater coverts of adults are broadly rounded. Those of males are so heavily vermiculated as to appear white, while those of females are iron gray and heavily flecked with white. Juvenile greater coverts are narrower, squared, often frayed to a point over the tertials, and often indistinctly edged with white over the secondaries. Those of males vary from heavily to lightly flecked while those of females vary from plain to barely discernible flecking. The middle coverts of adults are broadly rounded and "smooth". On males, these are vermiculated so as to appear white. On females, they are iron gray and heavily flecked with white particularly near their edges. Juvenile middle coverts are narrower and somewhat squared. On males, these are lightly vermiculated to heavily flecked, giving an overall appearance of heavily frosted gray. On females, these are plain or faintly flecked and the wing appears gray or brownish-gray.

During the hunting season, immature birds often replace both the juvenile tertials and tertial coverts with first winter feathers. For a given sex, these new feathers are indistinguishable from those of adult birds but markedly different from the juvenile greater and middle coverts which are retained.

CANVASBACK (continued)

Like redheads, canvasbacks can be aged largely by tertial coverts. These feathers are of three types: 1) adult type, similar to the surrounding coverts; 2) adult type, that are obvious replacements; and 3) juvenile type. Sex also can be determined from the first two, but it is usually necessary to refer to the tertials or middle coverts of the third type.

KEY TO CANVASBACK WINGS

1. Upper Wing:

- (a) All of the following: overall appearance white, primary coverts heavily flecked or vermiculated, tertials heavily vermiculated with white ----- Adult Male
- (b) All of the following: overall appearance gray brown to heavily frosted gray, primary coverts lightly flecked to unflecked, tertials lightly flecked with most flecking concentrated near tips or tertials and tertial coverts much whiter and more heavily vermiculated than remaining plumage ----- 2

2. Tertials and/or Greater Tertial Coverts:

- (a) Much whiter than surrounding feathers, obviously partial replacement of juvenile plumage ----- Immature Male
- (b) Approximately the same color as surrounding feathers ----- 3

3. Middle and Lesser Coverts:

- (a) Heavily flecked to lightly vermiculated, overall appearance heavily frosted gray ----- 4
- (b) Unflecked or very lightly flecked, overall appearance gray or brownish gray ----- Immature Female

4. Greater Coverts:

- (a) Usually well flecked, flecking tends to be more spread over feathers than in (b), often indistinct white tipping over secondaries, very ragged and somewhat narrow over tertials ----- Immature Male

CANVASBACK (continued)

- 4(b) Usually well flecked, flecking tends to be concentrated near ends of individual coverts, no white tipping present, smooth and relatively broad over tertials ----- Adult Female

GREATER SCAUP 1/

Sex Determination

Scapulars of adults of both sexes may be vermiculated. Those of adult males are more white than dark. Those of all females are more dark than white. Scapulars of immature males are often female-like, but usually have one or more male-like feathers. All adult males and many immature males have flecked tertials. Females do not have flecked tertials. The greater and middle coverts are plain on most immature and many adult females. Those of males are flecked or vermiculated. On female wings, flecking tends to be concentrated near the coverts edge. On immature males, flecking tends to be recessed from the covert's edge. Adult males have vermiculated coverts.

Age Determination

Juvenile tertials are frayed to a pointed tip. Usually, tertials of the adult plumage have rounded tips. Occasionally, they are similar to juvenile tertials. CAUTION: diving duck tertials are somewhat unreliable. The greater coverts of adults are smoothly rounded and shiny black over the tertials. Juvenile greater coverts are rough, often narrower, and dull black.

Juvenile tertials and tertial coverts are not replaced during the hunting season on most birds.

- 1/ CAUTION: Age and sex determination procedures for lesser scaup are similar but the appearance of wing characters is somewhat different.

KEY TO GREATER SCAUP WINGS

Sex Determination

1. Upper Wing:

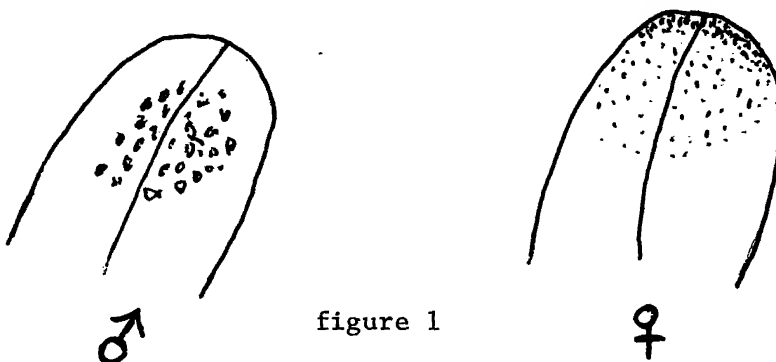
- (a) Any or all of the following: one or all of scapulars is more white than black. Tertials are flecked or vermiculated. Greater coverts are flecked particularly over the tertials ----- Male
- (b) All of the following: The scapulars are more black than white. Tertials are plain or have traces of flecking at tips. Greater coverts are unflecked- 2

2. Middle Coverts:

- (a) Flecked to vermiculated ----- 3
- (b) Plain ----- Female

3. Middle Coverts: (figure 1)

- (a) Individual coverts are completely flecked or vermiculated, or flecks are large but recessed 1/8" from feather's edge ----- Male
- (b) Individual coverts are flecked, generally with small flecks, primarily near their edges ----- Female



GREATER SCAUP (continued)

Age Determination of Males

1. Upper Wing:

- (a) Tertials are smooth or lightly frayed to a rounded tip. Over the tertials, greater coverts are wide and rounded. They are usually at least lightly flecked over primaries, secondaries and tertials. Middle coverts are vermiculated to lightly flecked evenly over coverts ----- Adult
- (b) Tertials are frayed to a pointed tip and may be either flecked or plain. Greater coverts are narrower, frayed somewhat towards a point over the tertials, and generally unflecked. Middle coverts are vermiculated to lightly flecked. Flecks are usually recessed 1/8" from the edges of individual coverts ----- Immature

Age Determination of Females

1. Upper Wing:

- (a) Tertials are smooth or lightly frayed to a rounded tip. Greater coverts are wide and rounded over the tertials, but rarely if ever flecked. Middle coverts are usually lightly flecked particularly near the edges of individual coverts but they may be plain ----- Adult
- (b) Tertials are invariably frayed to a pointed tip. Over the tertials, greater coverts are narrow, frayed to a point, and unflecked. Middle coverts are usually plain but occasionally lightly flecked near the edges of individual coverts ----- Immature

LESSER SCAUP

Sex Determination

Scapulars of adults of both sexes may be vermiculated. Those of adult males are more white than dark. Those of all females are more dark than white. Scapulars of immature males are often female-like but usually have one or more male-like feathers. The tertials of all adult males and many immature males are flecked. Female tertials are plain or, on a small number of adults, have a few flecks near the tips. The greater and middle coverts are plain on most immature and on many adult females. Those of males are heavily flecked or vermiculated. Flecking on female wings is usually much finer and tends to be concentrated near the edge of individual coverts. Flecking on immature male wings is larger, covers the entire covert, or tends to be recessed from the covert's edge. Adult males generally have vermiculated coverts.

Age Determination

Tertials of the juvenile plumage are frayed to a pointed tip. Tertials of the adult plumage are usually round tipped but often similar to juvenile tertials. CAUTION: diving duck tertials are somewhat unreliable. The greater coverts of adults are broadly rounded and shiny black. Over the tertials, those of males are usually flecked, but those of females are plain. Juvenile greater coverts are narrower, and usually frayed and dull black. A few immature males may have flecking over the tertials but most do not. Females have unflecked greater coverts.

Juvenile tertials and greater tertial coverts are not replaced during the hunting season in most instances.

KEY TO LESSER SCAUP

Sex Determination

1. Upper Wing:

- (a) Any or all of the following: One or more of the vermiculated scapulars are more white than black. Tertials are flecked or vermiculated. The greater coverts are flecked and are broadly rounded particularly over the tertials ----- Male

LESSER SCAUP (continued)

- 1(b) All of the following: the scapulars are more black than white. Tertials are plain or have traces of flecking at the tips. Greater coverts are unflecked - 2

2. Middle Coverts:

- (a) Flecked to vermiculated ----- 3
 (b) Plain ----- Female

3. Middle Coverts: (figure 1)

- (a) Individual coverts may be completely flecked or vermiculated or, flecks are large but recessed 1/8" from covert's edge ----- Male
 (b) Individual coverts are flecked, generally with small flecks, well distributed but concentrated near the covert's edge ----- Female

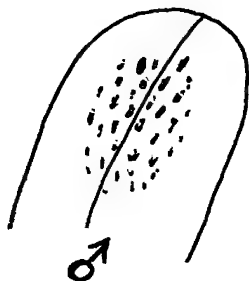
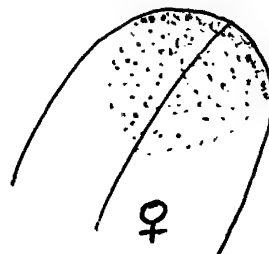


figure 1



Age Determination of Males

1. Upper Wing:

- (a) All of the following: tertials are smooth or lightly frayed to a rounded tip. Greater coverts are flecked and broadly rounded, particularly over the tertials. Middle coverts are vermiculated to lightly flecked with flecking distributed evenly on individual coverts - Adult
 (b) All of the following: tertials are frayed to a pointed tip and may be either flecked or plain. Over the tertials, greater coverts are narrow, frayed towards a point and usually unflecked. Middle coverts are vermiculated to lightly flecked. Flecking is often recessed 1/8" from edges of individual coverts ----- Immature

LESSER SCAUP (continued)

Age Determination of Females

1. Upper Wing:

- (a) All of the following: tertials are smooth or lightly frayed to a rounded tip. Greater coverts are wide and rounded over the tertials but rarely, if ever, flecked. Middle coverts are usually lightly flecked. Flecks are small and often concentrated at the edges of individual coverts ----- Adult
- (b) All of the following: tertials are invariably frayed to pointed tips. Over the tertials, greater coverts are narrow, unflecked, and usually frayed towards a point. Middle coverts are usually plain, but occasionally covered with small flecks that are concentrated at the edges of individual coverts ----- Immature

RINGNECKED DUCK

Sex Determination of Adults

The tertials of males are shiny greenish black and bluntly pointed. The tertials of females are similar but less shiny, greenish brown and broadly rounded. The middle and lesser coverts of males are brownish-black; those of females, blackish brown. On adult males, the two most proximal gray secondaries are usually edged with white. On females, one or both usually is not. Males are often flecked on the lesser coverts near the body. Females are rarely flecked.

All of these differences are either slight or not wholly consistent, and accurate sex determination is quite difficult. Because a number of immature males appear female-like, sex determination of immatures is not completely reliable.

Age Determination

Tertials of the adult plumage are usually slightly curved and the tips are rounded. Juvenile tertials are pointed, straight and much frayed. The greater coverts of adults are broadly rounded over the tertials. Those of the juvenile plumage are narrow, and often frayed to a blunt point, over the tertials. The middle coverts of adults are broad, rounded and smooth. Those of the juvenile plumage are narrower, somewhat squared and often rough.

RINGNECKED DUCK (continued)

During the hunting season, both juvenile tertials and greater tertial coverts are often replaced. The new feathers are similar to those of the adult plumage and contrast slightly with the remaining greater and middle coverts of the juvenile plumage.

KEY TO RINGNECKED DUCK WINGS

Sex Determination of Adults

1. Upper Wing:

- (a) Male characteristics: tertials are shiny, greenish black and bluntly pointed. Middle and lesser coverts are brownish black. The two most proximal gray secondaries are usually edged with white. The lesser coverts near the body are usually flecked ----- Male
- (b) Female characteristics: tertials are less shiny, greenish brown, and broadly rounded. Middle and lesser coverts are blackish-brown. The two most proximal gray secondaries are usually not edged. The lesser coverts near the body are usually plain ----- Female

Age Determination

1. Upper Wing:

- (a) All of the following: tertials are slightly curved and the tips are rounded. Greater coverts are broadly rounded and shiny black over the tertials. Middle coverts are broad, round and smooth ----- Adult
- (b) All of the following: tertials are either slightly curved and the tips are rounded or, straight and much frayed to a pointed tip. Greater coverts over the tertials are either broadly rounded and shiny black (but differing slightly from the surrounding coverts in both shape and color) or narrow, frayed toward a point and flat black. Middle coverts are narrow, squared and often rough ----- Immature

AMERICAN GOLDENEYE

Scapulars of adult males have white center stripes and dark edges. Scapulars of adult females have dark centers and white edges. The middle coverts of adult males are white except those over the tertials. Middle coverts of adult females and immatures of both sexes are part white and part gray. The greater coverts of adult females are heavily tipped with black over the secondaries and rounded and unfrayed over the tertials. The greater coverts of immatures of both sexes are often frayed over the secondaries and may show some black tipping. Over the tertials they are usually both frayed and faded. Most immature male wings are longer than 215 mm. Most immature females are shorter than 210 mm.

KEY TO AMERICAN GOLDENEYE

1. Middle Coverts:

- (a) Entirely clear white except over tertials ----- Adult Male 1/
- (b) Partly clear white and partly shiny black,
or partly gray and partly white----- 2

2. Tertials:

- (a) Shiny black tips, unfrayed or faded ----- 3
- (b) Dull black, tips frayed or faded to gray ----- 4

3. Greater Coverts:

- (a) Ends of coverts are black, unfrayed, and rounded over secondaries and tertials, Tips may show traces of gray over the tertials ----- Adult Female
- (b) Ends of coverts are white with traces of black, narrow and much frayed (especially over the tertials) to brownish gray at tips ----- 4

4. Scapulars: (if absent go to 5)

- (a) Longitudinal white stripes, or white centers and dark edging ----- Immature Male
- (b) No trace of white longitudinal stripes, may have dark centers and white edging ----- Immature Female

GOLDENEYE (continued)

5. Wing Length:

- (a) Less than 210 mm. ----- Immature Female
- (b) More than 215 mm. ----- Immature Male
- (c) Between 210 and 215 mm. ----- Immature Unknown

- 1/ If wing is shiny black, except for the greater coverts which are white, heavily tipped with black and their black bases show as a wide black band between a narrow area of white middle coverts, then if the most distal white middle coverts have conspicuous black centers, the bird is an adult male Barrow's Goldeneye. Adult female and immature Barrow's Goldeneye wings apparently cannot be separated from those of American Goldeneyes.

BUFFLEHEAD

Adult males have middle coverts that are entirely white except over the tertials. On immatures and adult females, middle coverts are black or brownish black. Adult females have tertials that are long and slightly drooping to rounded tips. Immatures have shorter, straighter tertials that are usually frayed to pointed tips. Adult greater coverts are rounded and unfrayed over the tertials. Immatures have narrow greater coverts that are sometimes slightly frayed.

The above statements are based upon examination of about 25 known-age wings and several hundred wings of unknown age or sex. Because of this, these statements are largely hypothetical.

KEY TO BUFFLEHEAD

1. Middle Coverts:

- (a) Entirely white except over the tertials ----- Adult Male
- (b) All black or brownish black ----- 2

BUFFLEHEAD (continued)

2. Wing Length:

- (a) 159 mm. or shorter ----- 3
- (b) 160 mm. or longer ----- Immature Male

3. Greater Coverts:

- (a) Frayed at tips over secondaries, tertial
coverts often appear narrow with brownish
fraying at their tips ----- Immature Female
- (b) Smooth and rounded over both secondaries
and tertials ----- 4

4. Tertials:

- (a) Appear short, straight, often with pointed
fraying that shows traces of brownish ----- Immature Female
- (b) Appear long, drooping, broadly rounded at
ends, may show fraying but not brownish ----- Adult Female

HOODED MERGANSER

Only a dozen known age wings were available for study. However, approximately 35 specimens were obtained for which nothing was known, but which seemed to separate readily into adult females, adult males, and immatures, of both sexes. From the combination of this material, the following suggestions are postulated.

Sex Determination of Adults

Adult males have shiny black, unfrayed tertials with longitudinal white-striped and light-gray middle coverts. Adult females have shiny black tertials with longitudinal white stripes, which while long and tapering (as in males), have slightly blunter tips. All the middle coverts are a relatively blackish brown.

HOODED MERGANSER (continued)

Age Determination

Immature birds are similar in gross aspect to adult females but immature tertials are straight and frayed at the tip and often appear brownish. The middle and greater coverts usually are frayed and brown, particularly over the tertials. These feathers are smooth and unfrayed on adults.

A few immatures can be identified as males by the presence of one or more light-gray middle coverts emerging among the darker feathers. However, it does not appear that the sex of most immatures can be determined.

KEY TO HOODED MERGANSER

1. Middle Coverts:

- (a) Mostly pale gray ----- Adult Male
- (b) Mostly brownish black or brownish gray ----- 2

2. Middle Coverts: (continued)

- (a) One or more pale gray feathers emerging
through surrounding dark coverts ----- Immature Male
- (b) All coverts approximately the same dark
color ----- 3

3. Middle Coverts: (continued)

- (a) Very rough and much frayed ----- Immature
- (b) Not noticeably rough or frayed ----- 4

4. Tertials:

- (a) Straight, brownish except center longitudinal
stripe, much frayed to a long point ----- Immature
- (b) Shiny black except for center longitudinal
white stripe, drooping tips, unfrayed, long
narrow taper to blunt point ----- 5

HOODED MERGANSER (continued)

5. Greater Coverts:

- (a) Much frayed at tips, faded brownish
particularly over tertials ----- Immature
- (b) Tips smooth, smooth shiny black over
tertials ----- Adult Female

WHITE-WINGED SCOTERS

Adult males can be readily identified by the extreme dark color of all feathers (except the secondaries and upper half of greater coverts) on the upper surface of the wing and the absence of faded fraying on tertials and tertial coverts.

Adult females are similar except that these feathers are very dark brown rather than black, it is often necessary to tilt the wings and to view them very closely to see that these wings are not black.

Immatures of both sexes are usually lighter brown than adult females, but do intergrade to an unknown extent. On immatures, the tertials and tertial coverts usually show light, faded fraying at the tips. This light colored fraying often is present also among the scapulars. The greater coverts often show much less white on their tips than adults and frequently are entirely brown.

KEY TO WHITE-WINGED SCOTERS

1. Middle and Lesser Coverts:

- (a) Shiny black ----- Adult Male
- (b) Brownish to brownish black ----- 2

2. Tertials, Tertial Coverts and Scapulars:

- (a) Tips have pale fraying; tertials often
no longer than white secondaries ----- Immature
- (b) Tips not frayed; tertials slightly
longer than white secondaries ----- 3

WHITE-WINGED SCOTERS (continued)

3. Greater Coverts:

- (a) Approximately one-half of the normally visible portion white, bases of these feathers blackish brown sharply delineated from white upper portion - Adult Female
- (b) Often only tips white, sometimes no white, bases brownish black not sharply delineated from white upper portion ----- Immature

SPECIES SEPARATION OF OLDSQUAWS, SURF AND AMERICAN SCOTERS

1. Two Most Distal Primaries (figure 1):

- (a) 10th primary shorter than 9th primary and either black and attenuated, or gray-black and tapering but much narrower than 9th primary ----- American Scoter
- (b) 9th primary is the longest, outerweb of this feather narrows near tip ----- Oldsquaw
- (c) 10th primary longest, all primaries are uniformly tapering ----- Surf Scoter

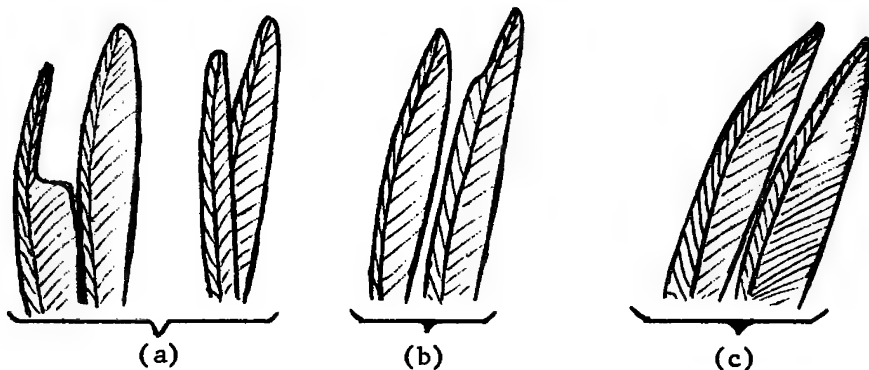


figure 1

KEY TO AMERICAN SCOTER WINGS

1. Wing:

- (a) Shiny black, 10th primary attenuated ----- Adult Male
- (b) blackish gray, 10th primary tapering
but smaller than 9th primary ----- 2

2. All of the following:

- (a) Tertials black, unfrayed with unfaded
tips; greater tertial coverts broadly
rounded unfaded at tips; middle coverts
broad and rounded ----- Adult Female
- (b) Tertials blackish gray, frayed and faded at tips;
greater tertial coverts narrow, faded and frayed
at tips; middle coverts narrow and trapezoidal ----- Immatures

KEY TO OLDSQUAW WINGS

1. Wing Color:

- (a) All upper wing coverts shiny black; tertials
and secondaries rufus ----- Adult Male
- (b) Upper wing coverts blackish brown with faded
tips, or pale brown with dark bases; tertials
and secondaries gray to rufus ----- 2

2. Upper Wing:

- (a) Middle coverts pale brown with dark bases;
tertials unfrayed and rufus; secondaries
rufus; greater coverts rounded and unfrayed ----- Adult Female
- (b) Middle coverts blackish brown to gray brown; tertials
rufus but much frayed and faded; greater coverts
narrow and faded ----- Immatures

KEY TO SURF SCOTER WINGS

1. Upper Wing:

- (a) Shiny black with no fading or fraying of tertials or greater tertial coverts ----- Adult Males
- (b) Dark gray black either without frayed and faded tertials and greater tertial coverts, or tertials and tertial coverts that are frayed to pale gray ---- 2

2. Upper Wing (continued):

- (a) Middle coverts dark gray black; greater tertial coverts rounded and unfrayed; tertials black with rounded unfaded tips ----- Adult Females
- (b) Middle coverts dark gray black; greater tertial coverts narrow and frayed to pale gray at tips; tertials dark gray black rounded frayed tips faded to pale gray ----- Immatures

KEY TO EIDER WINGS

1. Upper Wing:

- (a) Tertials, middle and lesser coverts entirely white; secondaries entirely black ----- Adult Males
- (b) Tertials, middle and lesser coverts brownish or blackish; secondaries brownish or blackish ----- 2

2. Upper Wing (continued):

- (a) Tertials dull black, edged with rufus; secondaries tipped with white; greater tertial coverts black, rounded and broadly edged with rufus; middle coverts round and broadly edged with rufus ----- Adult Female
- (b) Tertials dull black with faded tips; secondaries faded to pale gray at tips; greater tertial coverts black, narrow and frayed at tips; middle coverts black, narrow and trapezoidal, edged or plain ----- Immatures

SEPARATION OF AMERICAN AND RED-BREASTED MERGANSERS

The greater secondary coverts of red-breasted mergansers of all ages and sexes do not cover the black bases of the secondaries. This gives adult male wings two black bars and females and immatures one black bar anterior to the white speculum. On American mergansers, these coverts hide the black bases of the secondaries and adult males normally have one black bar and females and immatures have none. A few females or immatures have a black bar due to the black tips of the greater coverts rather than the exposed bases of the secondaries.

KEY TO AMERICAN MERGANSER WINGS

1. Upper Wing:

- (a) Tertials most proximal feather black, all others white narrowly edged with black; greater secondary coverts white with black bases, unedged; middle coverts entirely white and unedged ----- Adult Male
- (b) Tertials dark gray, darkest at edges; greater secondary coverts white with black bases, tips blackish gray; middle coverts dark gray ----- 2

2. Upper Wing (continued):

- (a) Tertials solid gray, smoothly rounded at tips; greater tertial coverts solid gray and smoothly rounded ---- Adult Female
- (b) Tertials narrow to frayed "wispy" tips; greater tertial coverts solid gray, narrow to frayed "wispy" tips --- Immatures

KEY TO RED-BREASTED MERGANSER WINGS

1. Upper Wing:

- (a) Tertials two most proximal are black, other three white and heavily edged with black; greater secondary coverts white, unedged, with black bases; middle coverts entirely white ----- Adult Male
- (b) Tertials gray with black edges, two most proximal may be entirely black; greater secondary coverts entirely white or white with black tips ----- 2

2. Upper Wing (continued):

- (a) Tertials two proximal feathers black, others gray with black edges, tips of all smoothly rounded; greater secondary coverts white with black edges; greater tertial coverts black with smoothly rounded tips ---- Adult Females
- (b) Tertials blackish gray with black edges, narrow to "wispy" tips; greater secondary coverts white and unedged; greater tertial coverts blackish-gray, narrow to "wispy" tips ----- Immatures

KEY TO RUDDY DUCK WINGS

1. Upper Wing:

- (a) Tertials curved and drooping; greater tertial coverts rounded at tips; middle coverts rounded and smooth ----- Adults
- (b) Tertials straight; greater tertial coverts somewhat squared at tips, appearing trapezoidal; middle coverts slightly trapezoidal often rough ----- Immatures

KEY TO BRANT WINGS 1/

1. Secondary Coverts:

- (a) Middle coverts all heavily edged with a light colored band ----- Immature
- (b) Middle coverts solid brownish-gray ----- Adult

1/ Applies to both North American species

LIBRARY, WILDLIFE RESEARCH CENTER
U.S. FISH & WILDLIFE SERVICE
ROOM 16, FEDERAL CENTER
DENVER, COLORADO 80225

**UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICES
BUREAU OF SPORT FISHERIES & WILDLIFE
WASHINGTON 25, D. C.**

OFFICIAL BUSINESS

**POSTAGE AND FEES PAID
U. S. DEPARTMENT OF THE INTERIOR**